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Item 6 of the provisional agenda*

REPORTS ON THE CONTRIBUTION OF SURVEYING, MAPPING AND CHARTING TO SUPPORT THE IMPLEMENTATION OF AGENDA 21

Comments on the contribution of surveying, mapping and charting to support the implementation of Agenda 21

Paper submitted by the Islamic Republic of Iran

The Islamic Republic of Iran, a large country covering 1,648,195 sq. km in the Asia and Pacific region, has worked for many years in the field of mapping and cartography. Since launching the first land resource satellite (ERTS-1) in 1972, the Islamic Republic of Iran has been actively involved in the application of space and remote sensing technology.

Satellite data covering the Islamic Republic of Iran are now being purchased from various receiving stations and then processed mainly by Iran's Remote Sensing Centre (IRSC) in order to conduct studies on land use and identify resources to be made available for the users.

The Islamic Republic of Iran strongly believes that it is possible to provide programmes for achieving sustainable development by collecting appropriate data through efficient space applications. Accordingly, our country uses space and airborne remote sensing to collect information and statistics on the Earth in order to study the country's resources. Then, after generating database systems and applying Geographical Information System (GIS) techniques, the information is used by experts and planners.

The nationwide use of GIS has been accepted as one of the main principles in planning and management, and certainly more prosperity will be gained through

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regional and international cooperation. It is obvious that the achievement of sustainable development strongly depends on three factors: the availability of data, planning and proper use of information. We have gained valuable experience in the use of GIS and other sophisticated techniques in physical planning and are ready to share our experiences with interested countries.

Some of our achievements in surveying, mapping and charting to support the implementation of Agenda 21 are listed below:

(a) Concerning agenda item 6 (a), "Environmental management, including management of the oceans, and disaster mitigation, reporting and documenting":

(i) Study of the sea-level fluctuations of the Caspian Sea through processing meteorological and land-resource satellite data;

(ii) Application of meteorological satellite data to detect oil spills in the Persian Gulf and Oman Sea, and monitoring their movement and development by processing temporal satellite data;

(iii) Research on sea-surface temperature measurements;

(iv) Study on the detection of phytoplankton on the surface of the Persian Gulf and Oman Sea;

(v) Study on the production of waterfront maps for the Persian Gulf and Oman Sea;

(b) Concerning agenda item 6 (b), "Public access to and exchange of information":

(i) Providing easily accessible automated map and photo archives;

(ii) Providing access to Internet facilities;

(iii) Exchanging information with other States of the region through the Permanent Committee on GIS Infrastructure for Asia and the Pacific;

(c) Concerning agenda item 6 (c), "Land reform, land management and development":

(i) Executing the Caspian Sea Geodynamic Project in cooperation with the Caspian Sea regional States;

(ii) Studying the Tehran Fault by using Global Positioning System (GPS) satellite and terrestrial measurements;

(iii) Levelling measurements and aerial photography after the occurrence of earthquakes;

(iv) Measuring crustal movements in different parts of the Islamic Republic of Iran;

(v) Studying, at the national level, potential flood zones in different parts of the country through the production of maps and the integration of that information by using GIS;

(vi) Studying potential soil erosion by using maps extracted from remote sensing data and GIS; this model can be generalized to the whole country;

(vii) Producing maps of the country's geological faults by using satellite data to survey and identify earthquake-prone regions of the country;

(viii) Producing land-use maps of the country on a scale of 1:1,000,000;

(ix) Producing land-cover maps by using meteorological satellite data within the framework of cooperation with the Asian Remote Sensing Society;

(x) Vegetation-cover mapping and monitoring in the Islamic Republic of Iran through the application of meteorological satellite data, within the framework of technical and financial cooperation with the United Nations Environment Programme (UNEP);

(xi) Designing and establishing a geodetic and levelling network;

(xii) Measuring and computing the levelling network;

(xiii) Measuring and computing gravity for the levelling network;

(xiv) Determining geodetic heights;

(xv) Collecting gravity data in order to determine levelling corrections;

(d) Concerning agenda item 6 (d), "Demography, human settlements policies":

(i) Producing the National Atlas of Iran, one volume of which is the National Demographic Atlas;

(ii) Providing land-use maps for identifying regions not suitable for constructing new cities or for urban development; to date, more than 200 comprehensive urban development plans for large and intermediate cities have been prepared;

(iii) Executing pilot projects with the Ministry of Housing and Urban Planning in order to determine the required methods and communication channels;

(e) Concerning agenda item 6 (e), "Desertification and land degradation":

(i) Studying desert regions in the Islamic Republic of Iran and producing maps of the advancing desert by using remote sensing technology; this

has been done in the form of a case study of some desert regions and should be generalized for all desert regions in future programmes;

(ii) Mapping deforested areas in certain forest regions in the north of the country, using temporal satellite data;

(f) Concerning agenda item 6 (g), "Safety of maritime and air navigation, including hydrographic surveys and nautical charting":

(i) Preparing hydrographic charts for the Caspian Sea, Persian Gulf and Strait of Hormuz;

(ii) Determining the mean sea level;

(iii) Establishing seven tide gauges on the coast of the Persian Gulf and monitoring the sea level;

(iv) Preparing tide-table predictions for a one-year period;

(g) Concerning agenda item 6 (h), "Other applications of surveying and mapping to support the implementation of Agenda 21":

(i) Executing the National Base-map Project (1:25,000), which covers the whole country in about 10,000 sheets;

(ii) Creating the National GIS at scales of 1:25,000, 1:100,000, 1:250,000 and 1:1,000,000;

(iii) Forming the National Council of GIS Users, composed of the representatives of different ministries;

(iv) Standardizing the products, services, structure and activities of organizations, units or groups;

(v) Establishing the National Topo-Database (NTDB) at the 1:25,000 scale;

(vi) Preparing image/photo maps at different scales, based on national requirements;

(vii) Preparing the Digital Terrain Model (DTM) by using 1:25,000 scale digital maps as well as preparing DTMs from points obtained by using GPS;

(viii) Preparing an ortho-image at the 1:100,000 scale from satellite images for the whole of the country;

(ix) Promoting educational and training capacity through the establishment of the National Cartographic Training Centre and specialized faculties, and arranging scientific seminars and conferences at the national, regional and international levels.